

Robert W. Gillespie, P.E.
Consulting Geotechnical Engineer

Registered in: Montana Wyoming North Dakota South Dakota Idaho Nevada
Maine New Hampshire Massachusetts Vermont Florida

ORIGINAL

30 December 1994

Marvin and Sandra Mintyala
Mister M Disposal, Inc.
HCR 85 Box 4066
Lewistown, MT 59457

Subject: Methane Monitoring Plan
Mister M Disposal Landfill
Lewistown, Montana
Project No. 579-03

RECEIVED

JAN 05 1995

Montana Department of Health
and Environmental Sciences
Waste Management Division

Dear Mr. and Mrs. Mintyala:

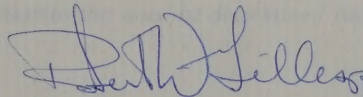
Attached please find the methane monitoring plan for your landfill in Lewistown, Montana. The plan has been prepared in general accordance with ARM 16.14.521 (f) and (g), and supplemented by discussions with Patrick Crowley of Montana DHES. Hopefully the plan is designed such that its implementation is easy and its utility is worthwhile.

The attached plan presents our rationale for the selected design, monitoring frequencies, action levels, responses to certain action levels, and basic forms for data acquisition. Equipment for monitoring has already been purchased and is based on methane rather explosive gases as a generic category.

We urge you to implement this plan even though it will be under review by the governing regulatory body. By implementing the plan, Mister M Disposal, Inc., will be in general compliance with the terms of its license.

If you have any questions or if we may be of further service, please contact us.

Very truly yours,



Robert W. Gillespie, P.E.



RWG:ci

cc: Montana DHES (2)

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JAN 6 1992

U.S. DEPARTMENT OF JUSTICE
FEDERAL BUREAU OF INVESTIGATION
WASHINGTON, D.C. 20535



INTRODUCTION

Methane (CH_4) is a colorless, odorless, tasteless gas which is lighter than air. In a landfill setting, it is produced from the decomposition of organic matter such as leaves, grass clippings, putrescible wastes, and other highly organic substances. The gas is an asphyxiant and explosive at concentrations of 5 to 15 percent in air.

Since the gas is dangerous in certain settings and quantities, observation of its movement is advisable. The plan which is described in the following sections is based on the premise that early detection and mitigation are superior to reactions required by delayed detection, and possible consequences. The design basis is clearly stated and followed throughout the plan, and the resulting monitoring recommendations are neither cumbersome nor unrealistic for a landfill of this size and composition.

DESIGN BASIS FOR PLAN

Regulatory

Regulations contained in the Administrative Rules of Montana (ARM) provide for the monitoring of methane at Class II landfills, and establish threshold action levels in certain situations. More specifically, ARM 16.14.521 (f), (g), and (h), are as follows:

- (f) *Owners or operators of all Class II landfill units must ensure that:*
 - (i) *The concentration of methane gas generated by the facility does not exceed 25 percent of the lower explosive limit for methane in facility structures (excluding gas control or recovery system components); and*
 - (ii) *The concentration of methane gas does not exceed the lower explosive limit for methane at the facility property boundary.*
- (g) *Owners or operators of all Class II landfill units must implement a department approved routine methane monitoring program that ensures that the standards of (f) of this subsection are met and that meets the following requirements:*
 - (i) *The type and frequency of monitoring must be determined based on the following factors:*
 - (A) *Soil Conditions;*
 - (B) *The hydrogeologic conditions surrounding the facility;*

- (C) *The hydraulic conditions surrounding the facility; and*
- (D) *The location of facility structures and property boundaries.*
- (ii) *The minimum frequency of monitoring must be quarterly.*
- (h) *If methane gas levels exceeding the limits specified in (f) of this subsection are detected, the owner or operator must:*
 - (i) *Immediately take all necessary steps to ensure protection of human health and notify the state director;*
 - (ii) *Within 7 days of detection, place in the operating record and notify the department in writing of the methane gas levels detected and a description of the steps taken to protect human health; and*
 - (iii) *Within 60 days of detection, implement a department approved remediation plan for the methane gas releases, place a copy of the plan in the operating record, and notify the department that the plan has been implemented. The plan shall describe the nature and extent of the problem and the proposed remedy.*

It is important to note that the regulations do not speak directly to distances from waste versus boundary, nor do they address what shall constitute the basis for a monitoring plan. While this could be advantageous from the engineering standpoint since it allows creativity in design, it also provides the regulators with the same latitude in review processes. Other states provide an outline or specific requirements for landfills of certain sizes and/or types from which both the designer and reviewer can establish benchmarks and common ground. Therefore, we have incorporated features from several other states, most notably Wyoming, Idaho, and New Hampshire.

Technical

The technical basis for design must incorporate those parts of the regulations which have direct pertinence, and blend them with the physical aspects and limitations of the site. The following sections develop our rationale for the recommendations which are presented in the user's portion of this plan.

Methane is lighter than air and has molecules which are smaller than water. Hence it travels in materials of low permeability with more alacrity than liquids. Since it is lighter than air, upward migration is the preferred path unless a confining layer and vapor pressure force it horizontally to some more permeable zone where it can escape. The geologic materials at the Mister M Landfill site have been shown to have low permeabilities in both the vertical and horizontal directions. It follows that monitoring points should be in close proximity to the fill mass for early detection.

The landfill site also has several occupied structures on surrounding property as illustrated on Figure 2 attached. Monitoring points are required which provide a detection basis for them. On-site structures could be at risk as well but can be easily evaluated with detection equipment on a timely basis.

Of the monitoring wells shown on Figure 2, seven were installed either exclusively for methane monitoring or for it and ground water detection. Table I below provides a brief description of each well location and its service zone. Logs of the borings and well completion forms are provided in Appendices A and B attached.

TABLE I
DESCRIPTION OF METHANE MONITORING WELLS

Well No.	Location	Description
MW - 4	Toe of Landfill	Close to landfill mass and downgradient.
MW - 2/7 Chester	West Side of Stormwater Pond	Down and slightly side gradient. Still close to fill mass.
MW - SM	Northeast Corner of Landfill	Close to upgradient end; provides detection point between fill and residence to east.
MW - 6M	East of Landfill	Side gradient; provides detection for Mintyala House and Mobile home.
MW - 8	Southwest of Office. In Original Drainage.	Provides detection point between fill mass and downgradient property boundary.
MW - 11M	West Side of Landfill above Borrow Area	Provides detection point for near-by residence.

All monitoring wells were installed with screen lengths which approximate or exceed the depth of adjacent landfill mass. Since methane is lighter than air, the screen interval should intercept any migrating methane. Sealing of the borehole annulus was done with a bentonite mix rather than grout. The latter tends to shrink while bentonite swells with time as water content increases. Our experience has shown this to be a superior seal.

Our work at the landfill has not indicated significant methane volumes. No vents or other vapor escapes were observed during periods of snow cover, and differential melting of snow appears more related to sun angle than subsurface mass temperature.

Frequency of monitoring is often a disputed topic because of the effort involved with monitoring seven discrete points plus buildings. Our experience has shown that frequent initial

monitoring leads to an informed basis for less stringent observation in the near term. Although there is little evidence of a methane problem, data to support that supposition are not available. Therefore, an intense period of monitoring for 6 to 12 months should yield the data necessary to make an informed decision with respect to long term observation.

Actual sampling of the wells can be critical to the process. While no standard for sampling has been set, we believe that each well should have a small brass or copper valve installed in the crown of the cap. The soft rubber tubing from the sampling instrument can be fit snugly over the orifice to allow a discrete sample from the well volume to be extracted without external influences.

Air quality sampling in buildings is difficult if the building is continually in use because of the frequent air changes. It follows that if a quiescent period is available, sampling should be accomplished at the end of it. For the office building, the critical areas will be the northeast and northwest corners because of proximity to the landfill and the bathroom because of pipe runs leading into it.

Action or threshold levels are prescribed in ARM 16.14.521 (f); we concur with them. The timeframes for notification and remedial plan implementation are also reasonable given the volatility of methane.

RECOMMENDED METHANE MONITORING PROGRAM

The following recommendations represent the "nuts and bolts" of the monitoring program. They can be modified if a situation arises which dictates the need to do so, but DHES and Robert W. Gillespie, P.E. should be given the opportunity to review and comment on the proposed changes before their implementation.

1. Monitor for methane at the locations listed on the attached summary sheet (Appendix C) on the first Friday of each month.
2. The office space should be sampled early in the morning prior to the start of the business day.
3. Utilize the Digiflam 2000 detector in accordance with the manufacturer's recommendations. The pump should be run until a stabilized reading is obtained. In the event that stabilization does not occur, record the highest value. The unit should be run in % LEL mode as well as the oxygen mode. The values should be recorded in the space provided on the attached form.
4. In the event that a methane reading equal to or greater than 25 percent of the LEL is found, the well should be allowed to rest for a short period and then be re-sampled to confirm or change the earlier reading. If the LEL is detected in any, the same procedure should be followed.

Robert W. Gillespie, P.E.

5. In the event that a methane concentration equal to or greater than 25 percent of the LEL is detected in a building, the building should be immediately ventilated, and steps should be developed and implemented to provide positive ventilation until an external methane venting system can be installed.

6. If methane readings at any well are at or above the LEL for two consecutive readings as described above, then the steps outlined in ARM 16.14.521 (h) must be followed. While the event has not occurred, you should be aware that the typical response is to perform a soil gas survey to develop concentration isocons which are, in turn, used to design a passive venting system.

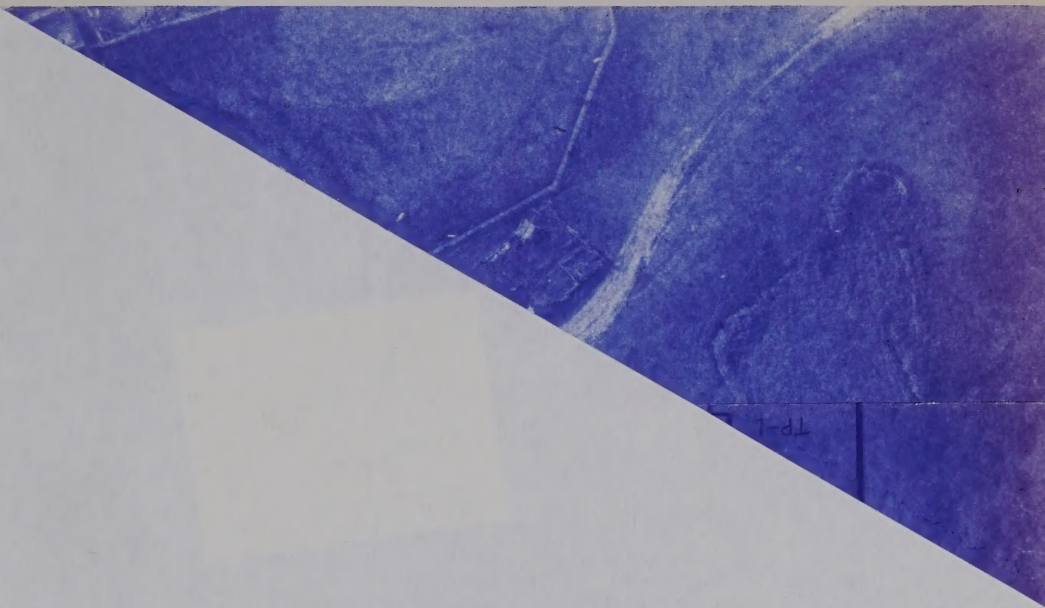
7. If, at the end of the first year of monitoring, methane levels are below 25 percent of LEL in all cases, then monitoring frequency should be reduced to quarterly samplings.

CLOSURE

It is important to remember that the acquisition of these and other data are critical to the operation and life of your landfill. The data gathered in the near term, and this plan in its final form will become part of your Operation and Maintenance Manual.

END

ORIGINAL



TP-1

FIGURE 2



LANDFILL

BORROW AREA

Kfr

DEBRIS POND

OLD RAILROAD

OFFICE WELL

HOUSE WELL

Morrison/Mgierle/CSSA
INC.

ENGINEERS SURVEYORS AERIAL PHOTOGRAPHY
2001 AVENUE BILLINGS MT 59102
(406) 256-8009

PHOTO DATE: SCALE: JOB NO: FRAME:

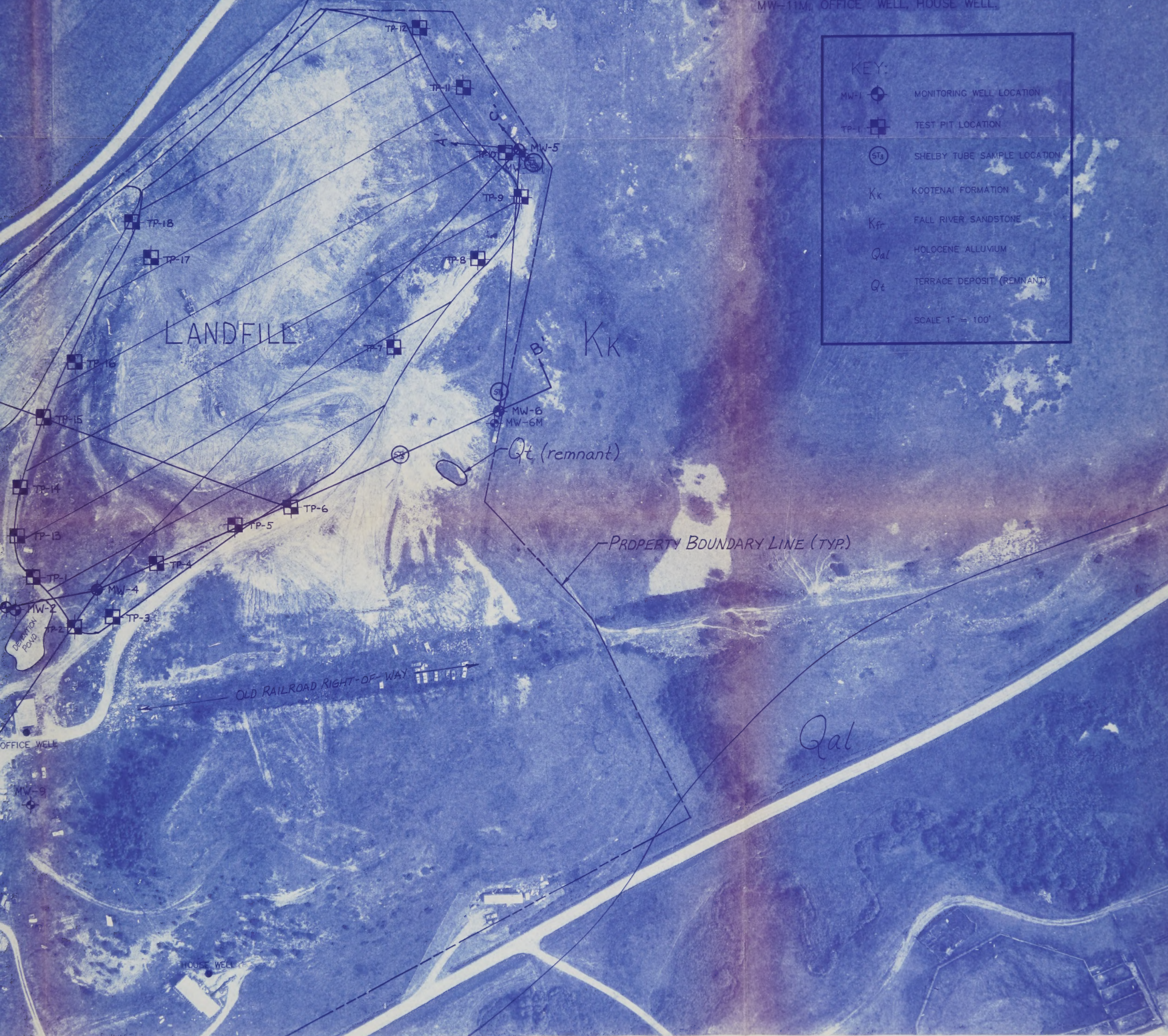
benaki
 Geoenvironmental, Inc.
 P.O. Box 1018 • Lewistown, Montana 59547 • (406) 538-5800

**GEOHYDROLOGIC SITE CHARACTERIZATION
 MISTER M LANDFILL
 LEWISTOWN, MONTANA**

SITE PLAN — Test Pit and Boring Locations; Surficial Geology
 PROJECT NO. 579-03 NOVEMBER 1993

FIGURE 2

REVISED: 11/94 Added MW-9, MW-10, MW-5M, MW-6M,
 MW-11M, OFFICE WELL, HOUSE WELL



KEY:

- MW-1 MONITORING WELL LOCATION
- TP-1 TEST PIT LOCATION
- STs SHELBY TUBE SAMPLE LOCATION
- Kk KOOTENAI FORMATION
- Kfr FALL RIVER SANDSTONE
- Qal HOLOCENE ALLUVIUM
- Qt TERRACE DEPOSIT (REMNANT)
- SCALE 1" = 100'

ORIGINAL

1-5-95

Methane

fig 2

APPENDIX A

Boring Logs for MW-5M, 6M, 9, 10 and 11M

TEST BORING LOG MW-5M

Project: Mister M Landfill
Location: Lewistown, Montana
Client: Mister M, Inc.

Approximate Surface Elevation: 4264.3
Ground Water Depth: NFGWE
Date: 10-14 & 18/-94

Project No. 579-03

Sheet No. 1 of 14

DEPTH, FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	SAMPLE RECOVERY, IN.	BLOWS PER 6"	SPT-N BLOWS PER FT.	MOISTURE CONTENT, %	LAB TESTS
0			SANDSTONE; Weakly cemented to moderately hard, silty, tan to tan-gray.					
5								
10								
15								
20								
25								
30			SILTSTONE; Soft, dry, some plasticity, hard fragments, gray-tan.					

TEST BORING LOG MW-5M

Project: Mister M Landfill
Location: Lewistown, Montana
Client: Mister M, Inc.

Approximate Surface Elevation: 4264.3
Ground Water Depth: NFGWE
Date: 10-14 & 18/-94

Project No. 579-03

Sheet No. 2 of 14

DEPTH, FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	SAMPLE RECOVERY, IN.	BLOWS PER 6"	SPT-N BLOWS PER FT.	MOISTURE CONTENT, %	LAB TESTS
35								
			SHALE; Soft, dry, plastic, thin, hard, gray zones below 46 feet, red-maroon.					
40								
45								
50								
55			SANDSTONE; Hard, dry, fine, silty, becoming shaley below 57 feet, gray to gray-tan.					
60			SHALEY SANDSTONE; Hard, dry to damp, fine, some plasticity, more sandy with depth, gray to gray-brown with red-maroon.					
65								

TEST BORING LOG MW-5M

Project: Mister M Landfill
 Location: Lewistown, Montana
 Client: Mister M, Inc.

Approximate Surface Elevation: 4264.3
 Ground Water Depth: NFGWE
 Date: 10-14 & 18/-94

Project No. 579-03

Sheet No. 3 of 14

DEPTH, FT.	SYMBOL SAMPLES	SAMPLE #	DESCRIPTION OF MATERIAL	SAMPLE RECOVERY, IN.	BLOWS PER 6"	SPT-N BLOWS PER FT.	MOISTURE CONTENT, %	LAB TESTS
70								
75								
80			SHALE; Soft, dry, plastic, red-maroon. Bottom of Exploration at 80 feet.					
85								
90								
95								
100								

TEST BORING LOG MW-6M

Project: Mister M Landfill
 Location: Lewistown, Montana
 Client: Mister M, Inc.

Approximate Surface Elevation: 4257.6
 Ground Water Depth: NFGWE
 Date: 10-15-94

Project No. 579-03

Sheet No. 4 of 14

DEPTH, FT.	SYMBOL SAMPLES	SAMPLE #	DESCRIPTION OF MATERIAL	SAMPLE RECOVERY, IN.	BLOWS PER 6"	SPT-N BLOWS PER FT.	MOISTURE CONTENT, %	LAB TESTS
0			SANDSTONE; Hard, dry, fine to very fine, grading to siltstone in zones, tan to tan-gray.					
5								
10								
15								
20								
25			SHALE; Soft, dry, plastic, red-brown.					
30			SANDSTONE/SILTSTONE; Moderately hard, dry, fine to very fine, tan-gray.					
			SHALE; Soft, dry, plastic, red-brown.					

TEST BORING LOG MW-6M

Project: Mister M Landfill
 Location: Lewistown, Montana
 Client: Mister M, Inc.

Approximate Surface Elevation: 4257.6
 Ground Water Depth: NFGWE
 Date: 10-15-94

Project No. 579-03

Sheet No. 5 of 14

DEPTH, FT.	SYMBOL	SAMPLES	SAMPLE #	DESCRIPTION OF MATERIAL	SAMPLE RECOVERY, IN.	BLOWS PER 6"	SPT-N BLOWS PER FT.	MOISTURE CONTENT, %	LAB TESTS
35									
40									
45				SANDSTONE; Hard, dry, fine, silty, grading to siltstone.					
				SHALE; Soft, dry, plastic, red-brown.					
50									
55									
60									
65									

TEST BORING LOG MW-6M

Project: Mister M Landfill
 Location: Lewistown, Montana
 Client: Mister M, Inc.

Approximate Surface Elevation: 4257.6
 Ground Water Depth: NFGWE
 Date: 10-15-94

Project No. 579-03

Sheet No. 6 of 14

DEPTH, FT.	SYMBOL	SAMPLES	SAMPLE #	DESCRIPTION OF MATERIAL	SAMPLE RECOVERY, IN.	BLOWS PER 6"	SPT-N BLOWS PER FT.	MOISTURE CONTENT, %	LAB TESTS
70									
75									
80				SANDSTONE; Hard, dry, fine to very fine, silty, limestone(?) lenses, gray.					
85				Bottom of Exploration at 82 feet.					
90									
95									
100									

TEST BORING LOG MW-9

Project: Mister M Landfill
Location: Lewistown, Montana
Client: Mister M, Inc.

Approximate Surface Elevation: 4176.8
Ground Water Depth: NFGWE
Date: 10-14-94

Project No. 579-03

Sheet No. 7 of 14

DEPTH, FT.	SYMBOL	SAMPLES	SAMPLE #	DESCRIPTION OF MATERIAL	SAMPLE RECOVERY, IN.	BLOWS PER 6"	SPT-N BLOWS PER FT.	MOISTURE CONTENT, %	LAB TESTS
0				CLAY (CH); Very stiff to hard, damp, highly plastic, occasional shale fragments, dark reddish-brown (weathered shale).					
5									
10									
15				SILTSTONE; Weakly cemented, fine, some plasticity when moistened, dry, hard seams, tan-gray.					
20				SHALE; Soft, damp, hard seams, plastic, maroon.					
25				SILTSTONE; Weakly cemented, dry, fine to very fine, thin (<2mm) bentonite seams, becoming hard below 27 feet, tan-gray to gray.					
30									

TEST BORING LOG MW-9

Project: Mister M Landfill
Location: Lewistown, Montana
Client: Mister M, Inc.

Approximate Surface Elevation: 4176.8
Ground Water Depth: NFGWE
Date: 10-14-94

Project No. 579-03

Sheet No. 8 of 14

DEPTH, FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	SAMPLE RECOVERY, IN.	BLOWS PER 6"	SPT-N BLOWS PER FT.	MOISTURE CONTENT, %	LAB TESTS
35								
40			SANDSTONE; Poorly indurated, dry, fine, silty to occasionally clayey, becoming sandy siltstone below 40 feet, tan-gray.					
45			SHALE; Soft with hard zones, damp, plastic, thin bentonite seams, maroon.					
50								
55								
60								
65			Bottom of Exploration at 62 feet.					

TEST BORING LOG MW-10

Project: Mister M Landfill
Location: Lewistown, Montana
Client: Mister M, Inc.

Approximate Surface Elevation: 4193.3
Ground Water Depth: 40'
Date: 10-14-94

Project No. 579-03

Sheet No. 9 of 14

DEPTH, FT.	SYMBOL SAMPLES	SAMPLE #	DESCRIPTION OF MATERIAL	SAMPLE RECOVERY, IN.	BLOWS PER 6"	SPT-N BLOWS PER FT.	MOISTURE CONTENT, %	LAB TESTS
0			FILL; Weathered shale, stiff, damp, some hard fragments, red-brown.					
5								
10								
15			SHALE; Soft, damp, plastic, hard fragments, red-brown with gray streaks.					
20								
25			BENTONITE; Soft, damp, highly plastic, shale seams below 37 feet, gray to maroon-gray.					
30								

TEST BORING LOG MW-10

Project: Mister M Landfill
Location: Lewistown, Montana
Client: Mister M, Inc.

Approximate Surface Elevation: 4193.3
Ground Water Depth: 40'
Date: 10-14-94

Project No. 579-03

Sheet No. 10 of 14

[illegible]

Robert W. Gillespie, P.E.
Lewistown, Montana

TEST BORING LOG MW-11M

Project: Mister M Landfill
Location: Lewistown, Montana
Client: Mister M, Inc.

Approximate Surface Elevation: 4263.3
Ground Water Depth: NFGWE
Date: 10-26-94

Project No. 579-03

Sheet No. 11 of 14

DEPTH, FT.	SYMBOL	SAMPLES	SAMPLE #	DESCRIPTION OF MATERIAL	SAMPLE RECOVERY, IN.	BLOWS PER 6"	SPT-N BLOWS PER FT.	MOISTURE CONTENT, %	LAB TESTS
0				SANDY SILTSTONE/SILTY SANDSTONE; Soft to moderately hard, dry, fine, some plasticity, tan-gray to light brown.					
5									
10									
15									
20									
25									
30				SHALE; Soft, bentonitic(?), dry to damp, gray and light gray.					

TEST BORING LOG MW-11M

Project: Mister M Landfill
Location: Lewistown, Montana
Client: Mister M, Inc.

Approximate Surface Elevation: 4263.3
Ground Water Depth: NFGWE
Date: 10-26-94

Project No. 579-03

Sheet No. 12 of 14

DEPTH, FT.	SYMBOL SAMPLES	SAMPLE #	DESCRIPTION OF MATERIAL	SAMPLE RECOVERY, IN.	BLOWS PER 6"	SPT-N BLOWS PER FT.	MOISTURE CONTENT, %	LAB TESTS
35			SHALE; Soft, dry, plastic, hard fragments, red-maroon to dark red-gray.					
40								
45								
50			SHALE; Soft, bentonitic(?) dry to damp, dark gray to light gray.					
55								
60			SHALE; Soft, dry, plastic, hard fragments, red-brown.					
65			SHALEY SANDSTONE; Soft, damp, fine, some plasticity, red-brown.					

TEST BORING LOG MW-11M

Project: Mister M Landfill
Location: Lewistown, Montana
Client: Mister M, Inc.

Approximate Surface Elevation: 4263.3
Ground Water Depth: NFGWE
Date: 10-26-94

Project No. 579-03

Sheet No. 13 of 14

DEPTH, FT.	SYMBOL SAMPLES	SAMPLE #	DESCRIPTION OF MATERIAL	SAMPLE RECOVERY, IN.	BLOWS PER 6"	SPT-N BLOWS PER FT.	MOISTURE CONTENT, %	LAB TESTS
70								
75								
80			SHALE; Soft, dry to damp, sandy zones between 82 and 86 feet, becoming harder with depth, light red to red-maroon.					
85								
90								
95								
100								

TEST BORING LOG MW-11M

Project: Mister M Landfill
Location: Lewistown, Montana
Client: Mister M, Inc.

Approximate Surface Elevation: 4263.3
Ground Water Depth: NFGWE
Date: 10-26-94

Project No. 579-03

Sheet No. 14 of 14

DEPTH, FT.	SYMBOL	SAMPLES	SAMPLE #	DESCRIPTION OF MATERIAL	SAMPLE RECOVERY, IN.	BLOWS PER 6"	SPT-N BLOWS PER FT.	MOISTURE CONTENT, %	LAB TESTS
105				Bottom of Exploration at 105 feet.					
110									
115									
120									
125									
130									
135									

GROUND WATER OBSERVATION WELL COMPLETION FORM

WELL NO. 78

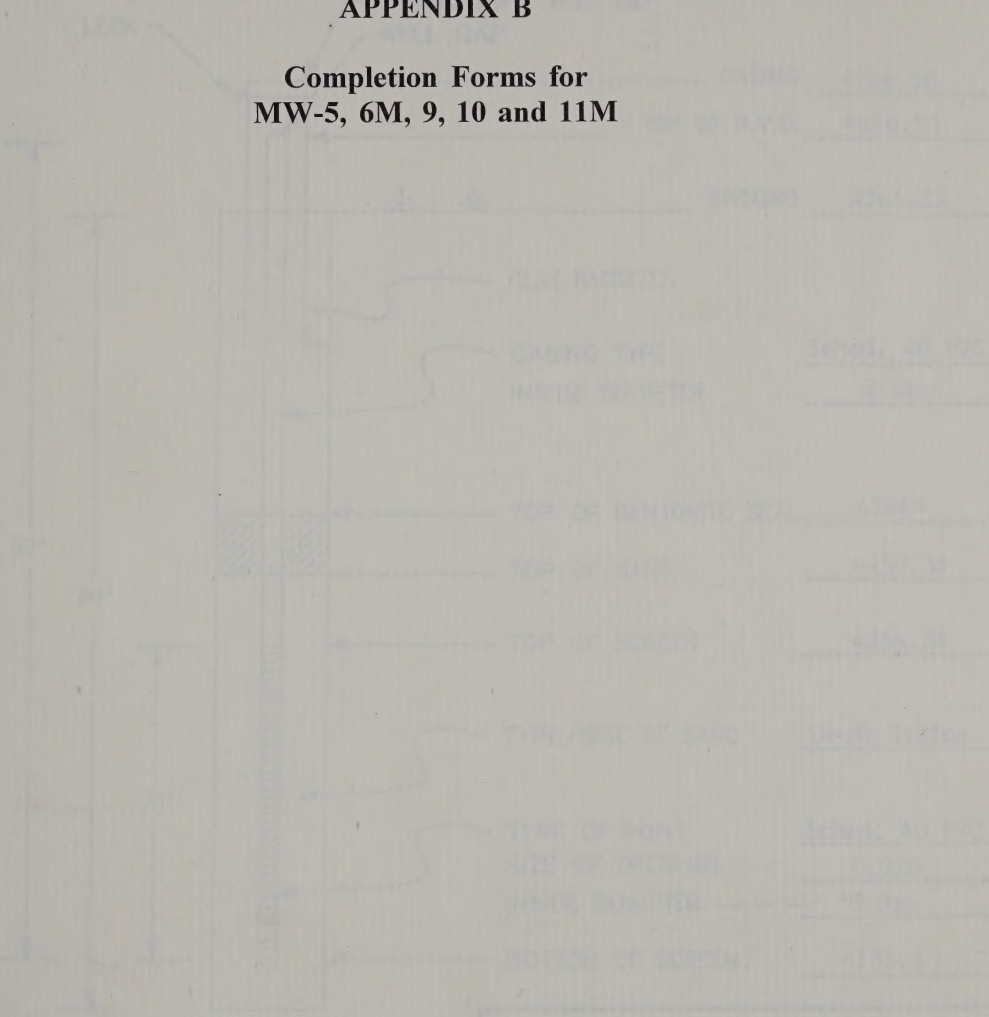
OBSERVED WATER SURFACE ELEVATION 428.1

DATE 12-1-84

DISTANCE FROM CENTER

APPENDIX B

Completion Forms for MW-5, 6M, 9, 10 and 11M



Robert W. Gillespie, P.E.

PROJECT Water II (L-11)

PROJECT NO.

LOCATION

DATE 12-1-84

COMPLETION DATE 12-1-84

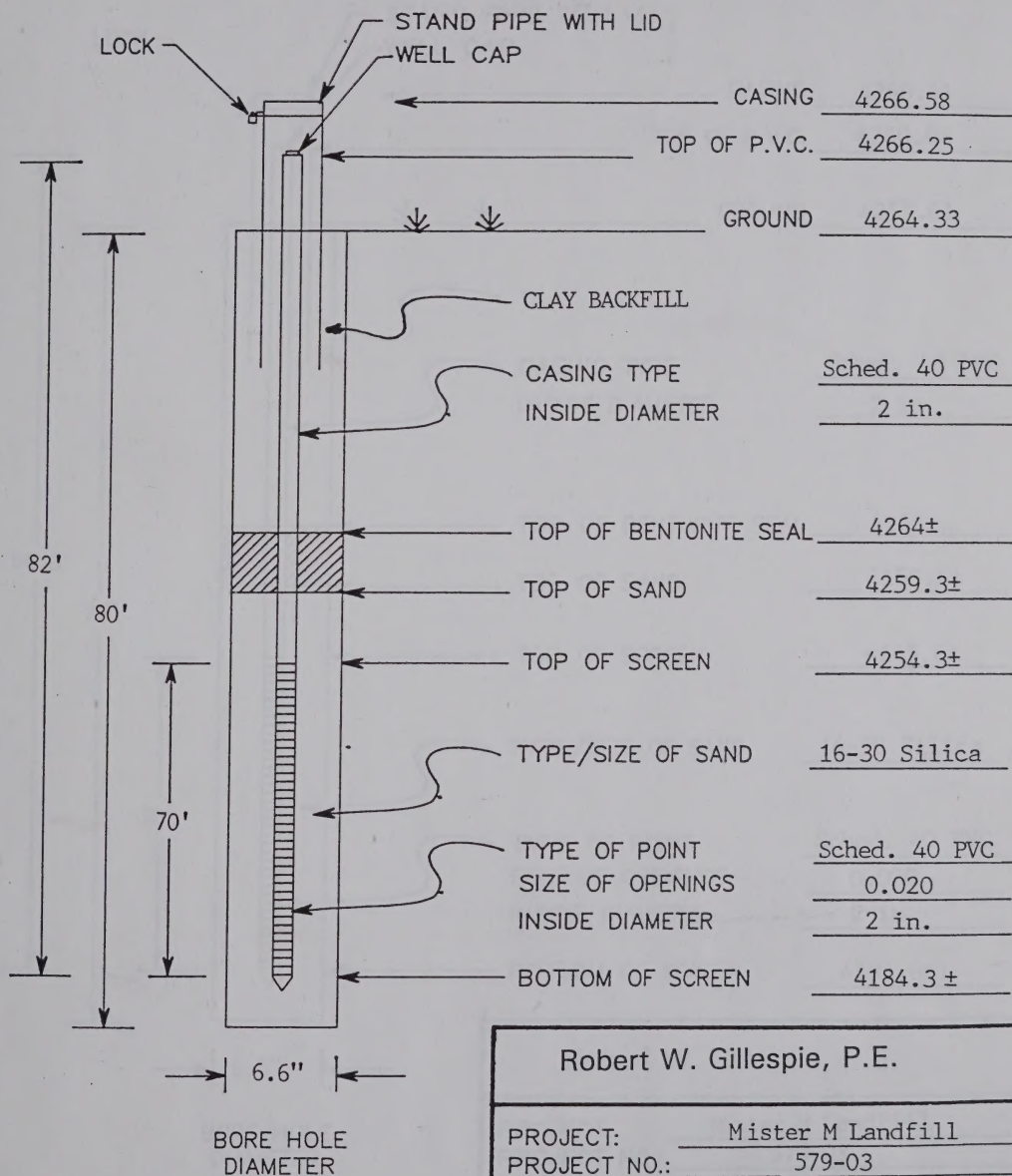
GROUND WATER OBSERVATION WELL COMPLETION PROFILE

WELL NO.: 5M

OBSERVED WATER SURFACE ELEVATION: NFGWE

DATE: 10-19-94

DISTANCE BELOW GROUND:



Robert W. Gillespie, P.E.

PROJECT: Mister M Landfill

PROJECT NO.: 579-03

LOCATION: Lewistown, MI

DRILLING DATE: 10-19-94

COMPLETION DATE: 10-19-94

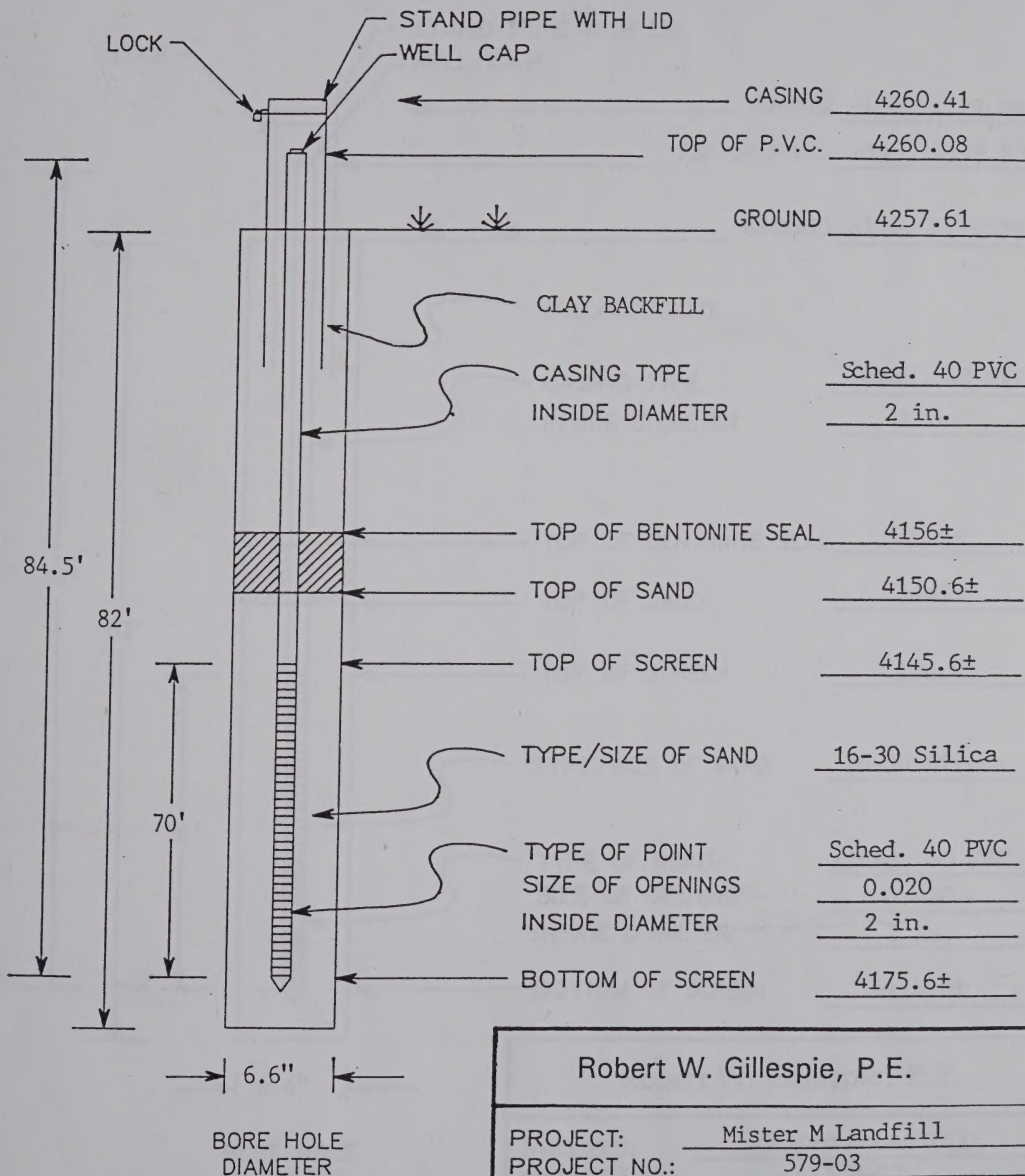
GROUND WATER OBSERVATION WELL COMPLETION PROFILE

WELL NO.: 6M

OBSERVED WATER SURFACE ELEVATION: NFGWE

DATE: 10-18-94

DISTANCE BELOW GROUND:



Robert W. Gillespie, P.E.

PROJECT: Mister M Landfill

PROJECT NO.: 579-03

LOCATION: Lewistown, MT

DRILLING DATE: 10-14 & 18/-94

COMPLETION DATE: 10-18-94

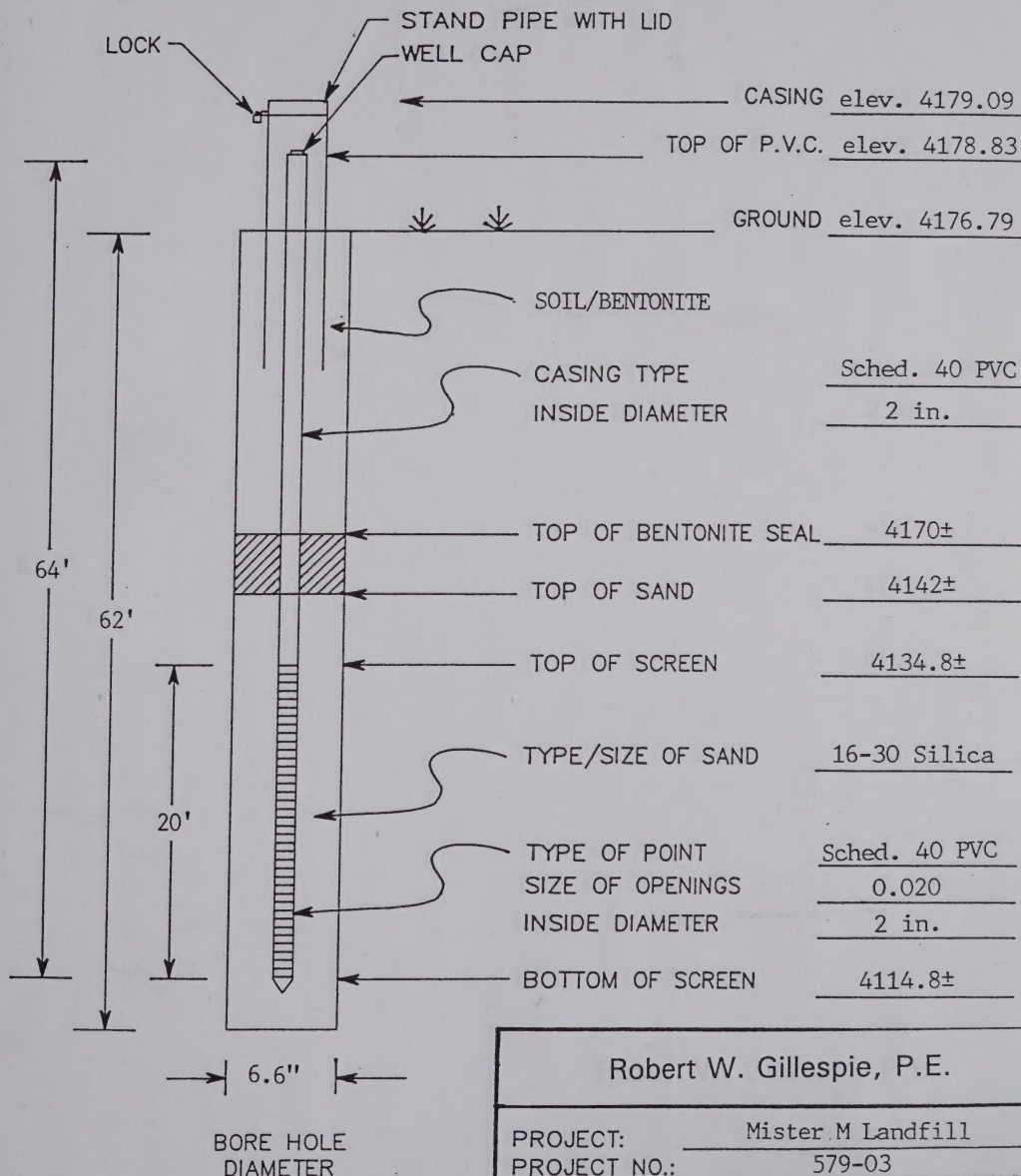
GROUND WATER OBSERVATION WELL COMPLETION PROFILE

WELL NO.: 9

OBSERVED WATER SURFACE ELEVATION: NFGWE

DATE: 10-14-94

DISTANCE BELOW GROUND:



Robert W. Gillespie, P.E.

PROJECT: Mister M Landfill

PROJECT NO.: 579-03

LOCATION: Lewistown, MT

DRILLING DATE: 10-14-94

COMPLETION DATE: 10-14-94

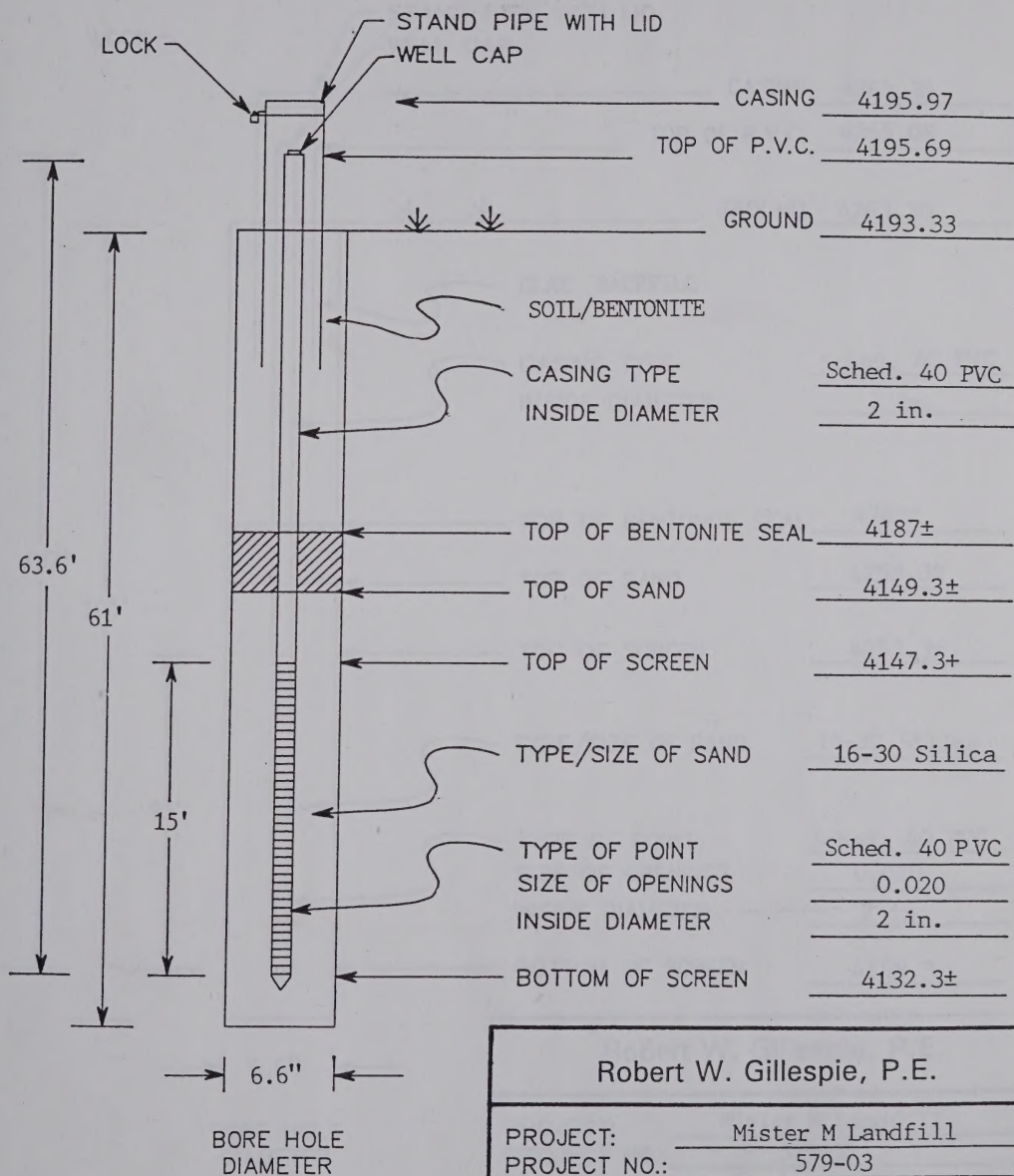
GROUND WATER OBSERVATION WELL COMPLETION PROFILE

WELL NO.: 10

OBSERVED WATER SURFACE ELEVATION: 4153±

DATE: 10-14-94

DISTANCE BELOW GROUND: 40 ft.



Robert W. Gillespie, P.E.

PROJECT: Mister M Landfill

PROJECT NO.: 579-03

LOCATION: Lewistown, MT

DRILLING DATE: 10-14-94

COMPLETION DATE: 10-14-94

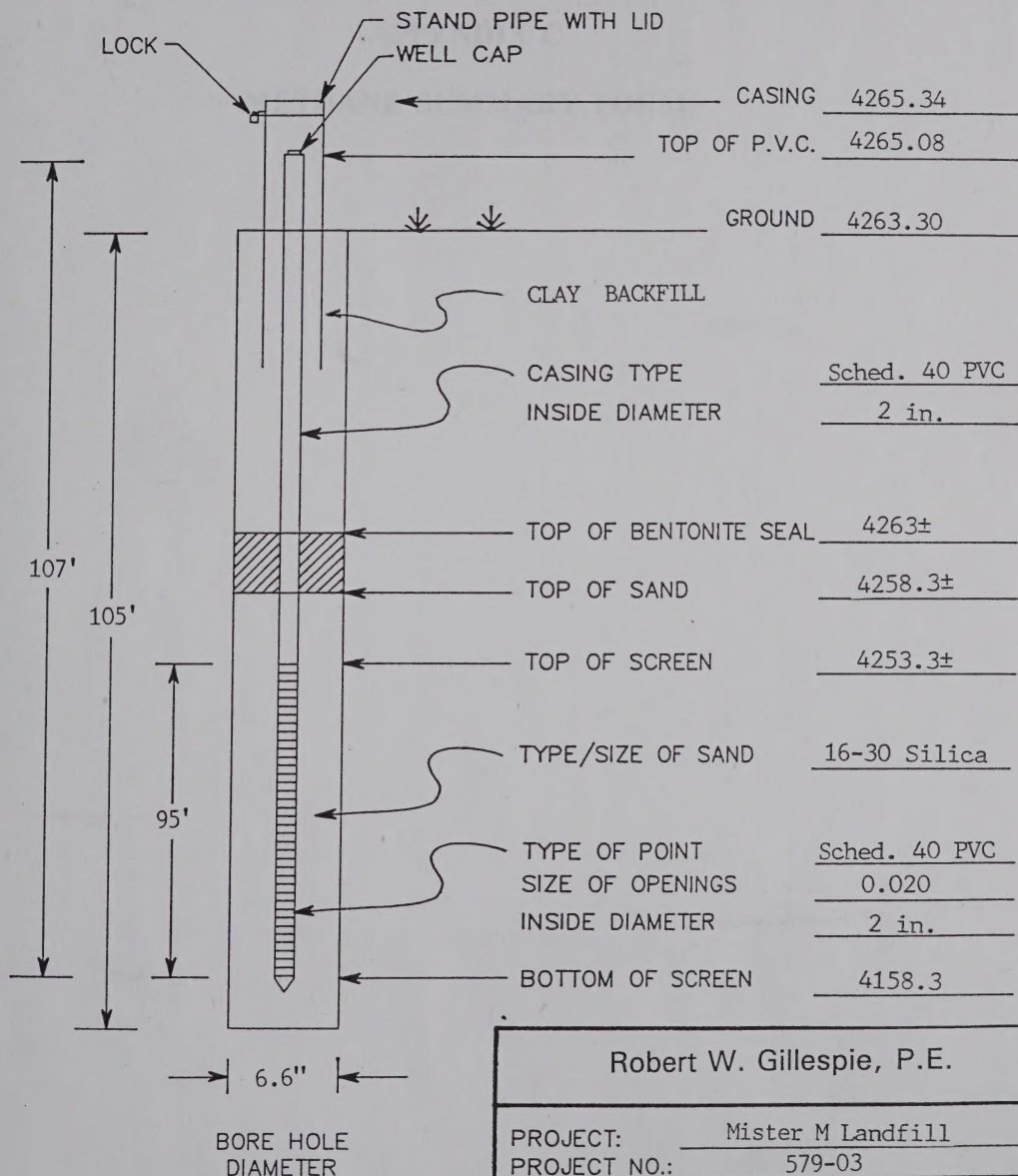
GROUND WATER OBSERVATION WELL COMPLETION PROFILE

WELL NO.: 11M

OBSERVED WATER SURFACE ELEVATION: NFGWE

DATE: 10-26-94

DISTANCE BELOW GROUND:



Robert W. Gillespie, P.E.

PROJECT: Mister M Landfill

PROJECT NO.: 579-03

LOCATION: Lewistown, MT

DRILLING DATE: 10-26-94

COMPLETION DATE: 10-26-94

APPENDIX C

METHANE SUMMARY FORM

[illegible]

